

NON-PUBLIC?: N
ACCESSION #: 9508230054
LICENSEE EVENT REPORT (LER)

FACILITY NAME: LaSalle County Station Unit 1 PAGE: 1 OF 4

DOCKET NUMBER: 05000373

TITLE: Unit 1 Scram Due to a Feedwater Signal Spike
EVENT DATE: 07/08/94 LER #: 94-011-02 REPORT DATE: 08/08/95

OTHER FACILITIES INVOLVED: DOCKET NO: 05000

OPERATING MODE: 1 POWER LEVEL: 058

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR
SECTION:
50.73(a)(2)(iv)

LICENSEE CONTACT FOR THIS LER:
NAME: Jim Hausser, System Engineer,
Extension 2447 TELEPHONE: (815) 357-6761

COMPONENT FAILURE DESCRIPTION:
CAUSE: SYSTEM: COMPONENT: MANUFACTURER:
REPORTABLE NPRDS: N

SUPPLEMENTAL REPORT EXPECTED: NO

ABSTRACT:

On July 8, 1994, at 0550 hours, the unit was at 58% power preparing for power ascension. When the 1D Condensate Pump was started, the 1B Turbine Driven Reactor Feed Pump (TDRFP) developed flow swings of 2 million pounds per hour. Flow was stabilized with minor adjustments to the Motor Driven Reactor Feed Pump. However, small oscillations were still present in the Manual/Automatic (M/A) station output signal, which produced oscillations in the control valve. During an attempted adjustment to the signal gain, a spike occurred resulting in a loss of speed on the 1B TDRFP, a loss of feed flow from the pump, and reduction of reactor vessel level. Repeated attempts to control level by use of the raise and lower pushbuttons at the manual and manual backup stations resulted in vessel level fluctuations until vessel level reached the 55.5 inch High Level Turbine trip and resulted in a Reactor Scram at 0947 hours.

The 1B Emergency Diesel Generator (EDG), which was synchronized to the

grid for a scheduled surveillance, assumed an abnormal amount of current and VAR's as a result of the grid disturbance caused by the loss of the Unit 1 generator.

This event is reportable in accordance with 10CFR50.73(a)(2)(iv) as an event that resulted in automatic actuation of the Reactor Protection System.

END OF ABSTRACT

TEXT PAGE 2 OF 4

PLANT AND SYSTEM IDENTIFICATION

General Electric - Boiling Water Reactor

Energy Industry Identification System (EIIS) codes are identified in the text as XX!.

A. CONDITION PRIOR TO EVENT

Unit(s): 1 Event Date: 7/08/94 Event Time: 0947 Hours

Reactor Mode(s): 1 Modes(s) Name: Run Power Level(s): 58%

B. DESCRIPTION OF EVENT

On July 8, 1994 at approximately 0550 hours, the unit was at 58% power and preparing for power ascension. The 1B Turbine Driven Reactor Feed Pump (TDRFP, FW) SJ! and the Motor Driven Reactor Feed Pump were in service. The 1D Condensate Pump was started. Following this, the 1B TDRFP developed flow swings of 2 million pounds per hour. Flow was stabilized with minor adjustments to the Motor Driven Reactor Feed Pump. Small oscillations were still present in the Manual/Automatic (M/A) station output, which corresponded to oscillations in the control valve. It was decided to hold Unit 1 power at 620 MWE until the 1B TDRFP gain could be adjusted. During the adjustment of the gain control with the M/A controller in Automatic, a spike resulted in a loss of speed on the 1B TDRFP and a loss of feed flow from the pump. The operator immediately took manual control of the M/A station and depressed the increase button. There did not appear to be any response from the 1B TDRFP so the operator went to the manual backup station, placed it to the demand substitution position and placed the speed adjustment control to the raise position. No immediate response was observed by the Operator, so he held the control switch in raise

until a response was observed. The vessel level then rose requiring him to reduce feedwater flow. When the pump responded to the decrease signal, the pump lost speed, reducing feed to the vessel, and vessel level decreased below normal. There were a total of 3 vessel level swings between Level 4 (31.5 inch) and Level 7 (40.5 inch) over a period of approximately three minutes before the trip occurred at 0947 hours.

The 1B Emergency Diesel Generator (EDG), which was synchronized to the grid for a scheduled surveillance, carried a high amount of current and VAR's as a result of the grid disturbance caused by the loss of the Unit 1 generator.

This event is reportable in accordance with 10CFR50.73(a)(2)(iv) as an event that resulted in automatic actuation of the Reactor Protection System.

TEXT PAGE 3 OF 4

C. APPARENT CAUSE OF EVENT

The apparent cause of the event was the signal spike which initiated the event. it was determined that the 1B TDRFP gain control logic needed to be adjusted. A specific procedure does not exist for making the gain adjustment. The gain adjustment was being performed by the technician under the direction of the his supervisor with concurrence of Operations and System Engineering. There was reluctance on the part of plant personnel to place the TDRFP in manual because of previous events that resulted in transients. There is also a bypass switch that must be depressed while making the gain adjust with the 1B TDRFP in automatic. This was not accomplished because the personnel did not feel it was necessary. The cause of the spike could not be determined. Testing of the card which was being adjusted did not indicate any malfunctioning components.

A secondary cause was the Man-machine interface. The system was insufficiently responsive to the Operator's needs. The slow system response impeded the Operator's ability to stabilize the transient.

D. SAFETY ANALYSIS OF EVENT

The safety consequences of this event were minimal. The turbine trip in this event initiated the Reactor Scram as required. Following the Scram, reactor pressure was controlled by cycling turbine bypass valves. Plant response was consistent with the UFSAR

Analysis of the event. All Engineered Safety Feature (ESF) actuations occurred as designed during the event.

E. CORRECTIVE ACTIONS

Signal spikes are not uncommon when adjusting electronic equipment and could occur again in the future. Future adjustments to this system will be controlled by specific procedures that will address using manual control of affected system components to mitigate the effect of system spikes during gain adjustments. LaSalle Technical Procedure LTP-300-31, "On-Line Tuning of RWLC System", has been implemented to provide guidance for adjusting the system with the affected unit on-line.

System ramp rates for the TDRFP control logic were changed to be more responsive to Operator's needs in controlling the system. This involved using the simulator to select ramp rates, operator involvement in the selection process, and tuning of the system in the plant to obtain optimum response.

TEXT PAGE 4 OF 4

E. CORRECTIVE ACTIONS CONTINUED

The 1B EDG was inspected in accordance with system Engineering recommendations. This required a visual airbox inspection, a visual generator inspection, and a generator megger. No damage was found during these inspections. A review by System Engineering indicated that the current did not reach overcurrent trip. The time period for which current exceeded 600 amps was estimated to be approximately five minutes. The polarization index on this EDG is also being trended until the next refueling outage at which time an evaluation of the data will be done to determine future surveillance requirements.

In that a three minute transient was followed by an automatic scram (via manual scram), management expectations may need to be more clearly brought in line with the degree of operational decision making conservatism that is desired. Our actions in this regard will be formulated in response to the recently received INPO SOER 94-01, "Nonconservative Decisions and Equipment Performance Problems Result in a Reactor Scram, Two Safety Injections, and Water-solid Conditions".

F. PREVIOUS EVENTS

The following scrams have occurred due to feedwater control:

LER No. Title

373/91-006 Reactor Scram on Low Reactor Vessel Water Level Due to Loss of "A" Turbine Driven Reactor Feedwater Pump Caused by Control Valve Closure

373/93-011 Unit 1 - Manual Scram Due to Disconnected Linkage on Valve Positioner on a Heater Drain Valve 373/94-010 Scram Due to Reactor Water Level Control signal Loss to the 1B Turbine Driven Reactor Feed Pump

373/94-010 Scram Due to Reactor Water Level Control Signal Loss to the 1B Turbine Driven Reactor Feed Pump

G. COMPONENT FAILURE DATA

No equipment failures which contributed to this event were identified. Equipment problems noted were due to chosen equipment setup and design.

ATTACHMENT TO 9508230054 PAGE 1 OF 1

Commonwealth Edison Company
LaSalle Generating Station
2601 North 21st Road
Marseilles, IL 61341-9757
Tel 815-357-6761

ComEd

August 15, 1995

U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D.C. 20555

Licensee Event Report #94-011-01, Docket #050-373 issued on June 13, 1995, was numbered in error. It is being resubmitted at this time with the correct number, 94-011-02.

Sincerely,

D. J. Ray
Station Manager

LaSalle County Station

DJR/PAS/lja

Enclosure

cc: NRC Region III Administrator
NRC Senior Resident Inspector
INPO - Records Center
IDNS Resident Inspector
IDNS Senior Reactor Analyst
Nuclear Licensing Administrator
Nuclear Safety Review

*** END OF DOCUMENT ***
